

# EXHIBIT S



**Bombardier Inc.**  
**Canadair Group**  
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Montreal, Quebec H3C 3G9  
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## ACKNOWLEDGEMENT OF RECEIPT

I, the undersigned, hereby acknowledge having received Bombardier Inc.'s Code of Ethics, effective February 1, 1991.

Signature: Keith Ayre  
Date: March 31/91

Badge: 72735  
Name: KEITH AYRE  
Department: 739  
Division: ENGINEERING

KEITH AYRE  
DEPT: 1-1-739-1 (072735)  
40 RESP: K. MILLER

The employee must return the form duly completed to his supervisor by March 31, 1991.

The supervisor must place the employee label on the form and send it to the Records Department, department 651, plant 1.

**From:** Keith Ayre  
**Sent:** Wednesday, July 13, 2016 5:50 AM  
**To:** keithayre1@gmail.com  
**Subject:** FW: Document numérisé de Mtl Ecopcopy@aero.bombardier.com  
**Attachments:** T1172657\_LDAPMAIL\_07132016-083656.pdf

**MITSUBISHI AIRCRAFT CORPORATION**  
NAGOYA AIRPORT, TOYOYAMA-CHO,  
NISHIKASUGAI-GUN, AICHI 480-0287 JAPAN

I HAVE READ THIS AGREEMENT CAREFULLY AND I UNDERSTAND AND ACCEPT THE OBLIGATIONS THAT IT IMPOSES UPON ME WITHOUT RESERVATION. I SIGN THIS AGREEMENT VOLUNTARILY AND FREELY.

Date: 12 July 2016

*K. Ayre*

Employee Name

Date: \_\_\_\_\_

*K. Ayre*

Employee Signature

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**From:** Keith Ayre  
**Sent:** Monday, July 11, 2016 2:54 PM  
**To:** keithayre1@gmail.com  
**Subject:** Revision

**Scope of Work:**

- (1) Mr. Keith Ayre will work as a Responsible Project Manager of Unit 5
- (2) Basic work scope is to develop and finalize T/C design, compliant to all applicable requirements.
- (3) This activity includes:
  - (a) Create Type Certification Plan for ATA21, ATA30, ATA36, ATA47.
    - ATA21: Air Conditioning
    - ATA30: Ice and Rain Protection
    - ATA36: Pneumatic
    - ATA47: Inert Gas System
  - (b) Conduct following respects, covering as;
    - Air Conditioning, control
    - Air pressure system for the high pressure bleed air ducting system REVISED
    - Cabin Pressure control system NEW
    - Pre-air pressure system
    - IGS (Inert gas system)
    - MSG-3/MMEL Analysis from the Reliability group: review and acceptance REVSED
    - Reliability group Safety Analysis: review and acceptance (AFA, SFHA, SSA's for each system, Particular risk analysis and System FMEA's) REVISED
    - Support ARP-4754 activities (as applicable) NEW
    - Support the preparation of the Airplane Flight Manual (AFM) NEW
    - V&V, T/C preparation procedure
    - Anti-ice system design and control
    - Ice Detector, Deicer,
    - WHCU, Wiper system
    - ADSH/EAI
    - Aircraft integration analysis
    - Aerodynamics analysis
    - Interface with the Aero group to determine Aero impacts on anti-ice system design NEW
    - Heat analysis for the air conditioning sizing REVISED
  - c. Flight test Support
    - S05 Ground Test, Flight Test,
    - S01 Ground Test, Flight Test,
    - Flight Test Specification
    - Flight Test at Moses Lake
    - Rig Test

- Define and support flight test for all smoke test detection, smoke penetration and smoke evacuation activities and systems effects related to Unit 5 systems. NEW

- (4) Any other management activities related to Unit 5 Team.
  - Schedule development, Progress measurement, Cost control, Risk Management, and Total Unit management, etc.
- (5) All tasks required to perform above activities are considered within work scope; overseeing/reviewing related documents, technical analysis, interface discussion within team members and all the other stakeholders including systems, structures, manufacturing, customer support, and partners.
- (6) Education of MITAC members about professional knowledge of the aircrafts.
- (7) Manage the technical contract requirements with applicable aircraft's suppliers and other interfacing suppliers as appropriate.
- (8) Provide expertise to assist in resolving the Unit 5 performance during any rig testing or flight testing.

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**From:** Keith Ayre  
**Sent:** Wednesday, August 24, 2016 10:20 AM  
**To:** 'Keith Ayre (keithayre@me.com)'  
**Subject:** FW: Acceptable Use of Alternate [REDACTED]

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**From:** Johns, David [mailto:david.johns@tc.gc.ca]  
**Sent:** Monday, December 09, 2013 3:54 PM  
**To:** Keith Ayre  
**Cc:** Eley, Mark; Moody, Ian; O'Connor, J Hugh; Schofield, Chris; Wei, Bench  
**Subject:** Acceptable Use of Alternate [REDACTED]

Keith,

Use of Alternate [REDACTED]

Comparison of [REDACTED] to [REDACTED]

[REDACTED] Testing

Bombardier ( BA ) has requested the use of the [REDACTED] - as an acceptable [REDACTED] in place of the [REDACTED]. The [REDACTED] has been standard equipment on past Bombardier programs.

In September 2013, BA provided information on recent [REDACTED] comparison tests for these 2 types of [REDACTED] using a [REDACTED]. BA has identified that this information would be consolidated into a formal document to be provided at a later date.

[REDACTED] guidance does allow for the use of other acceptable [REDACTED] to those that are specifically identified in the AC. As a result, i.a.w. [REDACTED], and supported by the information provided by BA, Transport Canada ( TCCA ) considers that the [REDACTED] - is an acceptable [REDACTED] for the purposes of [REDACTED] testing as per [REDACTED] on CSeries.

BA has also requested that the [REDACTED] to support the use of the [REDACTED] - for [REDACTED] programs, in particular, the [REDACTED]. TCCA acknowledges that this [REDACTED] - can be used to support certification activities for other BA aeroplane programs provided the [REDACTED] is valid [REDACTED] and where the [REDACTED].

BA Action Regarding [REDACTED]

1. Where used, BA is requested to identify the [REDACTED] - in the respective [REDACTED]
2. These [REDACTED] will need to be [REDACTED].

Merci / Thanks

David Johns, P.Eng.  
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Merci / Thanks

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**From:** Keith Ayre  
**Sent:** Thursday, August 18, 2016 4:57 PM  
**To:** keithayre1@gmail.com  
**Subject:** FW: Question for FAR25.1419 (e) - (h)

Dear Fukuda-san,

Thank you for your introduction and I'm very glad to be working with you very soon. You have asked some interesting questions that deserve detailed answers, however I have only provided some brief answers to your questions below. Your questions deserve much more discussion so I propose we set a meeting(s) to ensure I have answered all your questions clearly.

For your questions about regulation for IPS activation much of the information on the background to the rule is found on the FAA website. To help answer: I would like to know the history about IPS activation/deactivation regulatory requirement, here is the summary extract:

**Summary of the Final Rule**



Following FAR25.1419 (e) - (h) has been added in amendment 25-129 in 2009.

Does this means there was no certification activities related to (e) - (h) before 2009 certified aircraft?

**Yes there were activities before 2009 and when I am in the MRJ office I will be happy to discuss the details on pre-certification activities.**

Does this means there was no regulatory requirement about IPS activation/deactivation before 2009 certified aircraft?

**Due to the icing accidents that had occurred the FAA took the action to formalize certification rules applying to the ice detection systems. It introduced the 3 methods for ice detection:**

The three methods are: (1) Primary ice detection system, (2) visual cues of the first sign of ice accretion combined with an advisory ice detector, and (3) specifying conditions conducive to airframe icing.

Is there no "Primary" or "advisory" ice detector discussion with authority before 2009?

**There were both Primary and Advisory ice detection systems certified with all certification authorities before 2009.**

How IPS activation/deactivation design been derived for each airframer?

**This is an interesting question as it leads me to ask the certification method of ice detection for the MRJ? All other programs usually set the intended ice detection method (Primary or Advisory) early in the development program.**

I feel these requirement (e) - (h) seems common technique and seems not new design but this feeling contradicts to adding regulation FAR25.1419 (e) - (h) in 2009.

Best regards,

Keith

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> Sec. 25.1419  
>  
> Ice protection.  
>  
> [ If the applicant seeks certification for flight in icing conditions,  
> the airplane must be able to safely operate in the continuous maximum  
> and intermittent maximum icing conditions of appendix C. To establish  
> this--]  
> (a) An analysis must be performed to establish that the ice protection  
> for the various components of the airplane is adequate, taking into  
> account the various airplane operational configurations; and  
> (b) To verify the ice protection analysis, to check for icing  
> anomalies, and to demonstrate that the ice protection system and its  
> components are effective, the airplane or its components must be  
> flight tested in the various operational configurations, in measured  
> natural atmospheric icing conditions and, as found necessary, by one or more of the following means:  
> (1) Laboratory dry air or simulated icing tests, or a combination of  
> both, of the components or models of the components.  
> (2) Flight dry air tests of the ice protection system as a whole, or  
> of its individual components.  
> (3) Flight tests of the airplane or its components in measured  
> simulated icing conditions.  
> (c) Caution information, such as an amber caution light or equivalent,  
> must be provided to alert the flightcrew when the anti-ice or de-ice  
> system is not functioning normally.  
> (d) For turbine engine powered airplanes, the ice protection  
> provisions of this section are considered to be applicable primarily  
> to the airframe. For the powerplant installation, certain additional  
> provisions of Subpart E of this part may be found applicable.  
> \* \* \*  
> [ (e) One of the following methods of icing detection and activation  
> of the airframe ice protection system must be provided:  
> (1) A primary ice detection system that automatically activates or  
> alerts the flightcrew to activate the airframe ice protection system;  
> (2) A definition of visual cues for recognition of the first sign of  
> ice accretion on a specified surface combined with an advisory ice  
> detection system that alerts the flightcrew to activate the airframe  
> ice protection system; or

> (3) Identification of conditions conducive to airframe icing as  
> defined by an appropriate static or total air temperature and visible  
> moisture for use by the flightcrew to activate the airframe ice protection system.  
> (f) Unless the applicant shows that the airframe ice protection system  
> need not be operated during specific phases of flight, the  
> requirements of paragraph (e) of this section are applicable to all phases of flight.  
> (g) After the initial activation of the airframe ice protection  
> system--  
> (1) The ice protection system must be designed to operate  
> continuously;  
> (2) The airplane must be equipped with a system that automatically  
> cycles the ice protection system; or  
> (3) An ice detection system must be provided to alert the flightcrew  
> each time the ice protection system must be cycled.  
> (h) Procedures for operation of the ice protection system, including  
> activation and deactivation, must be established and documented in the  
> Airplane Flight Manual.]  
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